Technology Opportunity
Glenn Research Center • Cleveland • Ohio
Technology Transfer & Partnership Office
TOP3–00211

1- by 1-Foot Supersonic Wind Tunnel

Facility

The 1- by 1-Foot Supersonic Wind Tunnel (SWT) offers the supersonic research community an excellent low-cost testing tool for small-scale research.

Facility Description

The 1- by 1-Foot SWT specializes in conducting fundamental research in supersonic and hypersonic fluid mechanics, supersonic-vehicle-focused research and detailed benchmark quality experiments for Computational Fluid Dynamics code validation.

Facility Benefits

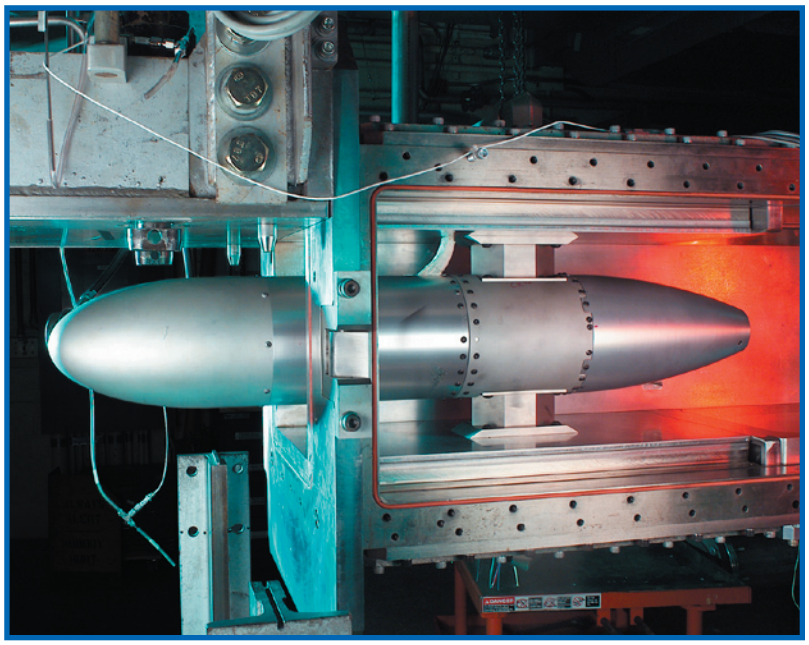
- Two-shift staffing and operation provide high productivity, flexibility, and quick-model installation and configuration
- A number of specialized support systems are available to meet the research customer's needs including auxiliary bleed, model hydraulics, and probe actuation systems
- Remotely accessible real-time data display
- Infrastructure in place for secure testing
- Accommodates in-house and private industry research programs
- Experienced staff of techincians, engineers, researchers and operators

Commercial Applications

- Valuable tool to conduct fundamental research in supersonic and hypersonic fluid mechanics

Programs and Projects Supported

- Rocket-Based Combined Cycle (RBCC) Inlet
- Pulsed Ejector Wave Propagation Test
- Pulse Detonation Engine Parametric Inlet Test



Pulsed ejector wave propagation test rig in the 1- by 1-Foot test chamber.

Capabilities

1×1 SWT	
Test section speed, mach	1.3,1.6, 2.0, 2.5, 2.8, 3.0, 3.5, 4.0, 5.0, 5.5, 6.0
Simulated Altitude, ft	11 000 to 115 000
Test section Reynolds number./per ft	$.4\times10^6$ to 16.5×10^6
Dynamic pressure, lbf/ft^2	80 to 1750
Test section total temperature, R	520 to 1100
Auxiliary air supply At 40 psig At 150 psig At 450 psig Model exhaust	 ---------- 2 lbm/s 8 lbm/s ----------
High pressure air storage at 2600 psig, scf	----------
Fuels	----------

Facility Testing Information

http://facilities.grc.nasa.gov

Contacts

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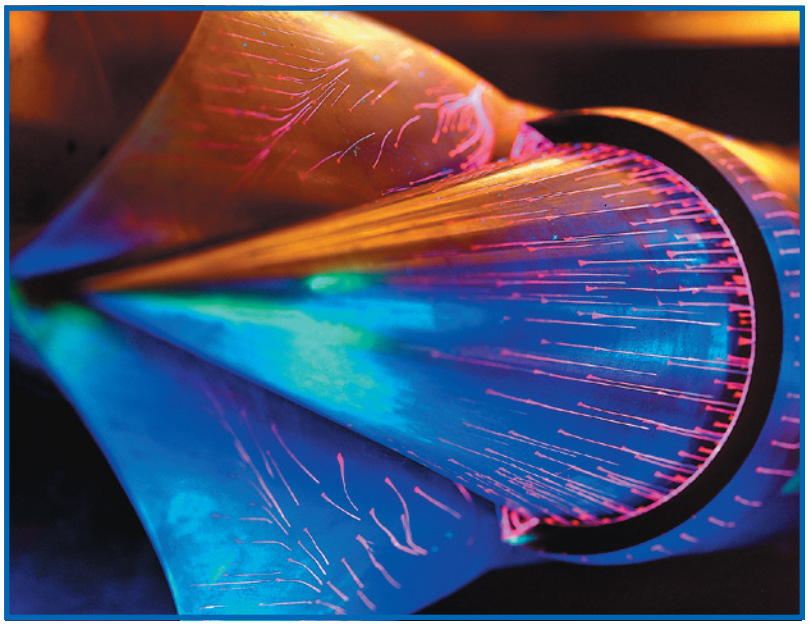

The 1-by 1-foot Supersonic Wind Tunnel oil flow visualization on the GTX inlet test rig.